May 20th, 12:30 PM

Testosterone Treatment Does Not Facilitate Prefrontal Cortex Mediated Cognition in Male Marmosets (callithrix jacchus)

Matthew LaClair
University of Massachusetts Amherst

Et al.

Testosterone Treatment Does Not Facilitate Prefrontal Cortex Mediated Cognition in Male Marmosets (*callithrix jacchus*)

Matthew LaClair [1], Jeemin Chang [2] and Agnès Lacreuse [2].

1 Neuroscience & Behavior Program, University of Massachusetts, Amherst MA 01003
2 Department of Psychology, University of Massachusetts, Amherst MA 01003

Aging in men is associated with decreases in serum testosterone (T) and a decline in cognitive abilities. We sought to clarify the relationship between T, aging and cognition using the common marmoset (*callithrix jacchus*), which has been shown to be a useful model of human aging. Ten castrated male marmosets (ages 3-8) were given weekly injections of either T cypionate dissolved in cottonseed oil (T, n = 5) or cottonseed oil alone (controls, n = 5). Cognitive function was assessed with two tasks, the object reversals (OR) and the delayed response (DR). Marmoset behavior was recorded twice daily using a modified frequency scoring system, measuring 20 target behaviors in 15-s intervals over 5-min. For the OR task, no effect of group ($F(1,8) = .51$, $p = .50$), reversal ($F(3,24) = .527$, $p = .67$), or group x reversal interactions ($F(3,24) = .640$, $p = .60$) was found in the number of correct trials. There was a significant effect of outcome on response latency, with all monkeys having longer latencies on incorrect trials ($F(1,2451) = 45.36$, $p < .001$). Although there was a main effect of delay ($F(4,32) = 8.779$, $p < .001$) on the DR task, there was no effect of treatment ($F(1,8) = .65$, $p = .81$) or an interaction treatment x delay ($F(4,32) = .445$, $p = .76$). No significant difference between the groups was found on any of the behaviors measured, however, the T-treated marmosets tended to spend more time eating than the controls ($t(8) = 2.239$, $p = .056$). Overall, the lack of effect for T treatment on these cognitive tasks is consistent with previous studies in macaques and men and suggest that T does not facilitate prefrontal cortex-mediated cognition in male marmosets.